

REMARKS

In the Office Action dated 18 October 2005, claims 1-18, all claims pending in the above-captioned application were rejected. Applicant has carefully reviewed the Office Action and submits the Amendments above and these remarks as a full and complete response.

Applicant has cancelled claims 1-16 and 18, amended claim 17, and submitted new claims 19-38.

Applicant's claims 17 and 19 through 29 and 34 through 37 are directed to a weatherproof protective housing containing a fingerprint sensor and preferably a responsive circuitry mounted within the housing. The housing serves to protect the fragile fingerprint sensor from shocks and environmental damage and provides a switching means to reduce power usage and aging of the sensor. Also claimed is a shuttle card system useable with the circuitry in the housing which is preferred for multiple users (c.f. [0041]).

Applicant's claims 30 through 33 are directed to a method of conservation of energy, typically for a vehicle battery, in which a sleep mode is used to power-down the fingerprint sensor, and a wake-up sequence is activated in response to an action at the sensor. The action may be an opening of a protective cover over the fragile sensor, or pushing a button on the facia surrounding the sensor face.

Claims 34 through 37 are directed to the use of an enroller device as part of the system and individually authorizes use of a vehicle based upon a fingerprint. The enroller draws power from the access system and is valid only if the password for the vehicle system is known (i.e., the password is a vehicle security code). The enroller device can be used to enroll fingerprint information directly into the system or to transfer fingerprint information to a shuttle card.

Claim 37 is directed to a component of the device of claim 19 to prevent vehicle theft using a fingerprint access control system. An interlock on a vehicle starter circuit is used instead of the more common ignition interlock. Ignition interlocks, while generally reliable, can and do fail. When a motor is stopped while a vehicle is moving, power steering is eliminated and vacuum boost for brakes is limited to storage. Applicant's system merely prevents starting but is inapplicable when the motor is running.

Claim 38 is directed to a method to prevent theft using a fingerprint sensor and a starter interlock relay.

Chip based fingerprint sensors operate with a finger in very close proximity to the silicon chip substrate. Typically, very thin protective coatings are applied to the chip surface to protect the chip from contamination and electrical disturbance. These coatings characteristically offer limited protection and are easily damaged by impact or abrasion. Fingerprint sensors mounted substantially flush with a surface have an acceptable lifetime if not subjected to multiple shocks, impacts, abrasions, or direct sunlight. The external surface of a vehicle, such as an automobile, is routinely bombarded with rain, sleet, rock salt, stones, mud and other road hazards and often left outside year-round. Thus, a distinct need is found to provide additional protection for the sensor surface.

Applicant has found that an external fingerprint sensor on a vehicle must be protected for reliability. Notwithstanding intrusion into electronic components by moisture, "road grime" salt, mud and other daily hazards can both damage the surface of the sensor and cover it to make it inoperable when needed. A good analogy is the windshield which must be cleaned regularly but which also degrades due to roughening from daily use. Long-term exposure to sunlight, unavoidable in Southern and Southwestern states in the U.S. and semitropical places around the world, has been shown to degrade the sensors over time and should be avoided.

Power consumption by a fingerprint sensor is an additional concern. Firstly, a “live” sensor degrades more quickly than a sleeping sensor. Secondly, one of the advantages of a fingertip vehicle access is that great wads of keys may be left behind when one travels, such as by air. During the time of the trip, a vehicle is left stationary, drawing down the battery through innumerable electronic devices. The fingerprint vehicle access system adds to the drain. A sleep mode virtually eliminates that specific drain. A small battery backup, as recited in claim 17, saves an otherwise inactive system in emergency, preventing electronic brain death. Such a backup battery also may be used to provide sufficient charge to the main battery to get a start.

The sensor of this invention can be used with an accessory card reader which provides an alternative fingerprint enrollment process. These “shuttle cards” are useful for fleets of vehicles such as taxicabs, package delivery trucks and service vehicles such as police cars. One card validates a drive for use of multiple vehicles. The car is enrolled and contains fingerprint information which is transferred to the device on the car. At such time, the holder’s fingerprint can activate the system. The user need not be enrolled on each vehicle separately. The reader may be adapted for bar codes, magnetic codes or RFID chips, as discussed at [0041] through [0043].

Finally, the fingerprint access system of this invention can be transferred from vehicle to vehicle with minimal labor. Factory installed systems or systems which require drilling of exterior body panels are not truly portable but are left with the vehicle even if used for only a few months. In the preferred embodiment, all of the fingerprint verification is retained within the housing, enhancing portability while minimizing the chance of being stranded by vandalism or theft of a second housing.

Original claims 1 through 5, 7, 9, 10, 14, 15 and 16 had been rejected under 35 USC 102 over U.S. Patent No. 6,100,811. The reference is directed to an OEM system integrated

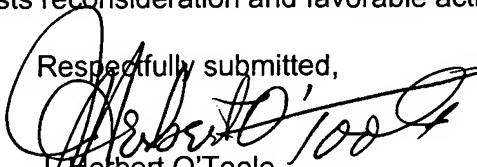
into the door handles and interior components of a new automobile (c.f. Figs. 3, 4). The external applications such as those shown in Figs. 1-3 avail no protection for the sensor membrane surface. There is neither a sleep mode nor a convenient method for awaking the sensor from a sleep mode (eg. cover) or button activated switch.

Applicant's amended claims, fully supported by the specification, cover aspects of an operational system absent the deficiencies in the referenced system. Examples are the cover to protect the sensor surface and the sleep mode.

The remaining rejections made in the Action rely upon the '811 reference and are directed to aspects of Applicant's invention which are no longer claimed.

In view of these Amendments and Remarks, Applicant submits that the application is in condition for allowance and requests reconsideration and favorable action thereon.

Respectfully submitted,



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Attachment: Petition for 1-Month Extension of time
Fee Transmittal, excess claims

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by Jacqueline Beavers

